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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,153	01/11/2002	Iwao Saikatsu	0171-0809P-SP	5805
2292	7590	10/16/2003	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			WYROZEBSKI LEE, KATARZYNA I	
PO BOX 747			ART UNIT	PAPER NUMBER
FALLS CHURCH, VA 22040-0747			1714	

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/042,153		SAIKATSU ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Katarzyna Wyrozebski Lee		1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0702</u> . | 6) <input type="checkbox"/> Other: _____                                    |

*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by SASAKI (US 6,080,230).

Table 1 of the prior art of SASAKI disclose following non-asbestos friction material composition:

TABLE 1

Material	Proportion (Vol. %)
Novolak type phenolic resin (including hexamethylenetetramine) having a mean molecular weight shown in the following Table 2	20
Graphite	10
Rubber powder	7
Cashew dust	13
Barium sulfate	10
Mica	4
Iron oxide	4
Potassium titanate	14
Copper fiber	3
Aramid pulp	6
Ceramic fiber	4
Magnesium oxide	3
Zirconium Oxide	2

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Potassium titanate fibers have Moh's hardness of less than 4.5 and both copper fiber and ceramic fiber have Moh's hardness greater than 4.5. The amount of the potassium titanate and cashew dust is within the limitation of the present claims.

The total of the copper fibers and ceramic fibers in the composition of SASAKI is 7 vol. %, which is approximately 30% of the total fiber content.

In the light of the above disclosure, the prior art of SASAKI clearly anticipates the limitations of claims rejected above.

3. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by HARA (US 6,220,404).

Examples (Tables 1 and 2) of the prior art of HARA (col. 2 and 5) discloses following non-asbestos friction material compositions:

TABLE 2

		Example 1	Comparative Example 1
Binder	Silicone modified resin	20	20
Fibrous	Aramid fibers*1	10	10
base	Alumina Silica fibers	5	5
material	Potassium titanate fibers	15	15
	Copper fibers	5	5
Friction	Graphite*2	3	3
adjust-	Antimony trisulfide	2	2
agent	Cashew dust	15	15
	Isoprene rubber powders	5	5
	Barium sulfate	15	15
	Zeolite	5	0

Note)

\*1 Kevlar fibers mfd. by DuPont-Toray Co., Ltd.

\*2 CB 150, trade name, mfd. by Nippon Graphite Industries, Ltd.

TABLE 1

Material	Proportion (vol. %)
Phenol resin	20
Aramid fibers	10
Alumina - silica fibers	5
Potassium titanate fibers	15
Copper fibers	5
Graphite	3
Antimony trisulfide	2
Cashew dust	15
Isoprene rubber powder	5
Barium sulfate	20

Potassium titanate fibers have Moh's hardness of less than 4.5 and both copper fiber and alumina silica fiber have Moh's hardness greater than 4.5. The amount of the potassium titanate and cashew dust is within the limitation of the present claims.

The total of the copper fibers and alumina silica fibers in the composition of HARA is 10 vol. %, which is approximately 30% of the total fiber content.

In the light of the above disclosure, the prior art of HARA clearly anticipates claims rejected above.

4. Claims 1, 2, 4, 5 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by KINOUCHI (US 6,372,817).

The example in Table 1 of the prior art of KINOUCHI discloses following non-asbestos friction material composition:

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TABLE 1

		Quantity (% by weight)			
Components		Ex. 1-3, Comp. Ex. 1, 2	Ex. 4	Ex. 5	
Copper fiber <sup>1</sup>		20.0	20.0	20.0	
Ceramic fiber <sup>2</sup>		10.0	10.0	10.0	
Aramid fiber <sup>3</sup>		5.0	5.0	5.0	
Potassium titanate fiber <sup>4</sup>		6.0	6.0	6.0	10
Phenolic resin <sup>5</sup>		12.0	12.0	12.0	
NBR powder <sup>6</sup>		2.5	2.5	2.5	
Graphite <sup>7</sup>		7.0	7.0	7.0	
Barium sulfate <sup>8</sup>		22.5	22.5	22.5	
Diantimony trisulfide <sup>9</sup>		5.0	5.0	5.0	
Cashew dust coated with a liquid IR	Cashew dust <sup>10</sup> Liquid IR <sup>11</sup>	10.0	—	—	15
Cashew dust coated with a liquid NBR	Cashew dust <sup>10</sup> Liquid NBR <sup>12</sup>	—	10.0	—	
Cashew dust coated with a liquid SBR	Cashew dust <sup>10</sup> Liquid SBR	—	—	10.0	
<hr/>					
Copper fiber <sup>1</sup> (produced by Tokyo Seiko Rope Mfg. Co., Ltd., trade name: TAFMIC FIBER, average fiber length: 3 mm, average fiber diameter: 75 μm)					20
Ceramic fiber <sup>2</sup> (produced by Shinnittatsu Kagaku Kabushiki Kaisha, trade name: SC1400D2, average fiber length: 440 μm, average fiber diameter: 3.6 μm)					
Aramid fiber <sup>3</sup> (Kevlar fiber produced by Toray DuPont Co., Ltd., trade name: 1F538, average fiber length: 2 mm, average fiber diameter: 12 μm)					25
Potassium titanate fiber <sup>4</sup> (produced by Otsuka Kagaku K.K., trade name: TOFICA-YD, average fiber length: 10-20 μm, average fiber diameter: 0.3-0.6 μm)					
Phenolic resin <sup>5</sup> (produced by Cashew Co., Ltd., trade name: No. 2021)					
NBR powder <sup>6</sup> (produced by Nippon Zeon Co., Ltd., trade name: NIPPOL 1411, average particle size: 32 μm)					30
Graphite <sup>7</sup> (produced by Nippon Kokuen Kabushiki Kaisha, trade name: CB150, average particle size: 30 μm)					
Barium sulfate <sup>8</sup> (produced by Sakai Chemical Industry Co., Ltd., trade name: B · C, average particle size: 10 μm)					
Diantimony trisulfide <sup>9</sup> (produced by Nippon Seiko K.K., trade name: P-3, average particle size: 15 μm)					
Cashew dust <sup>10</sup> (produced by Cashew Co., Ltd., trade name: H101, average particle size: 170 μm)					35
Liquid IR <sup>11</sup> (produced by Kuraray Co., Ltd., trade name: LIR-30)					
Liquid NBR <sup>12</sup> (produced by Nippon Zeon Co., Ltd., trade name: NIPOL 1312)					

Potassium titanate fibers have Moh's hardness of less than 4.5 and both copper fiber and ceramic fiber have Moh's hardness greater than 4.5. The amount of the potassium titanate and cashew dust is within the limitation of the present claims.

In the light of the above disclosure, the prior art of KINOUCHI clearly anticipates claims rejected above.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over SASAKI (US 6,080,230) or HARA (US 6,220,404) or KINOUCHI (US 6,372,817) either one of which in view of KOBAYASHI (US 5,383,963)

The discussion of the disclosure of the prior art of SASAKI or HARA or KINOUCHI from paragraph 2 or 3 or 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of either prior art applied against present claims is specific recitation of the dimensions of the fibers.

With respect to the above difference, the prior art of KOBAYASHI discloses non-asbestos friction material composition, which just like in all the other disclosures is utilized in making disk breaks for vehicles.

The prior art of KOBAYASHI discloses that in col. 4, lines 44-47 that:

**The composite fiber of the present invention is prepared in the form of a platelike polycrystalline fiber having a diameter of about 20 to about 50  $\mu$ m and a length of about 100 to about 400  $\mu$ m, although the fiber size is dependent on the structural conditions, especially**

Therefore the fiber dimensions of the prior art of KOBAYASHI lie squarely in the middle of the dimensions of the fiber of the present invention.

Potassium titanate fibers having dimensions such as those in the prior art of KOBAYASHI, have higher wear resistance, higher coefficient of friction and improved strength (col. 4, lines 64-67).

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art to utilize inorganic fibers having dimensions of 20-50microns in diameter and 100-400microns in length in the disclosure of either SASAKI or HARA or KINOUCHI and



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thereby obtain the claimed invention. Utilizing such large fibers will result in a composition having had higher wear resistance, higher coefficient of friction and improved strength.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art that has not been applied against present claims contains examples that are 102-type material against present claims. The disclosures were not applied against present claims, since they either are not available as a prior art for date purposes or require translation when applied. The examiner reserves the right to apply the latter if needs to be. US 2003/0026969 to NAGATA; US 2003/0049426 to KOBAYASHI; US 6,620,860 to OKAYAMA; US 6,558,793 to ODANI, US 2002/0033315 to YAMANE, US 2002/0169231 to OKAYAMA.

The disclosure of US 2002/0157321 to CHIBA is commonly own, however it will not be utilized in ODP rejection since the present invention does not render obvious a total amount of organic substances and a total amount of abrasive in a volumetric ratio of 1.5:1 to 3.5/1 nor the amount of the fiber having Moh's hardness of at least 4.5.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

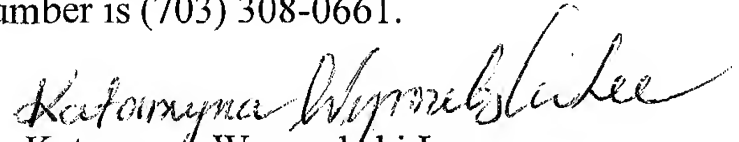
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Katarzyna Wyrozebski Lee  
Primary Examiner  
Art Unit 1714

October 10, 2003